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Schumpeter Finanzberatung GmbH:
Evaluating Investment Risk

Schumpeter Finanzberatung GmbH (SF) is a small German investment management firm founded in 2002 by Elke Schumpeter.[1] After graduating from business school, Schumpeter joined the equity strategy group of Deutsche Bank in Frankfurt. But after the meteoric rise and staggering fall of the equity markets, especially technology stocks, at the turn of the millennium, Schumpeter decided she wanted more control over her investing decisions and struck out on her own. Schumpeter launched SF with only €23 million in capital, which she raised from a set of family connections. The anchor investment came from her partner, Michael Lorenz, who was not involved in the day-to-day operations of the firm. SF's assets under management (AUM) grew slowly during the first few years. Starting in 2006, however, referrals from current investors and from Schumpeter's former colleagues helped the firm's business take off. By April 2014, SF's AUM had risen to just over €400 million. All of the current investors are individuals with significant financial assets beyond those invested with SF. SF does not currently have any institutional clients. SF's strategy thus far has been to invest only in the European equity market and in short-term German government bonds.[2] At the suggestion of some investors, Schumpeter is now considering expanding her firm's investment thesis to include investments in individual stocks. Before making such a significant change in strategy, Schumpeter must decide how to measure the risk of such an investment.

Schumpeter Finanzberatung's Investment Strategy

SF's current investment strategy is almost textbook simple. Based on her experience in the equity markets and the lessons she learned at Deutsche Bank, Schumpeter realized there were two broad strategies she could pursue. The first, stock picking, would mean Schumpeter would research and buy individual stocks that were cheap due to the market's misunderstanding of the stock's value. The equity analysts she worked with at Deutsche Bank and many of the bank's institutional clients on the buy side used this strategy. Because SF's assets under management were small to begin with, this was not the strategy Schumpeter chose.

[1] Finanzberatung means "financial advisory." GmbH stands for Gesellschaft mit beschränkter Haftung, which means "company with limited liability." This is a common type of organizational form for boutique firms in Germany.

[2] SF's offices are located in Frankfurt am Main's Ostend district, in the shadow of the European Central Bank's new building, where monetary policy for the European Union is determined.

Instead, Schumpeter chose the alternative strategy: tactical asset allocation, also known as market timing. She invested her clients' money in the equity markets and short-term German government bonds.[3] The investment thesis was to target a portfolio of 60% equities and 40% German treasury bills (T-bills). SF's clients could obtain a portfolio with a fixed 60/40 allocation from any investment firm and thus were not interested in such a portfolio. To differentiate itself from other investment firms, SF's strategy was to actively alter the mix between equities and treasury bills, with the objective of outperforming the 60/40 benchmark. The allocation could be altered from a low of 40% in equities to a high of 80% in equities. Although this was not a strict limit, the fund has almost always stayed within these bounds. The fund currently has 65% invested in equities.

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Several features of this strategy appealed to SF's investors. The strategy was low cost. SF's staff was extremely lean. The office consisted of only three employees, and Schumpeter was the only investment professional. Because the firm traded only high-volume liquid government bonds and an equity index, the trading costs were low as well.[4] Not buying individual stocks also enabled Schumpeter to make changes easily and cheaply in the portfolio. SF invested the equity portion of the portfolio in the STOXX Europe Total Market Index (TMI). Trading with her former colleagues at Deutsche Bank, Schumpeter was able to buy and sell the index efficiently.[5]

By the time Schumpeter left her job at Deutsche Bank, in the summer of 2002, she had seen the volatility of the equity markets up close and had received an education in risk. The performance of the equity markets was as risky as she had learned in school, but experiencing the volatility personally was different than looking at statistical measures in the safety of the classroom. The market had risen by 110% from the beginning of 1997 to its peak in the spring of 2000 and then had fallen 42% by the time she left Deutsche Bank (see **Exhibit 1**). In retrospect, it proved an opportune time to enter the equity markets. Although the market continued to fall until the beginning of 2003, the European equity market rose almost continually for the next several years, doubling between the beginning of 2003 and the beginning of 2007 (see Exhibit 1).

Although SF opened its doors at the end of 2002, the firm did not have a significant amount of capital under management until 2006. The investment environment was challenging. The dramatic rise in equity valuations in 2006 and 2007 meant any fund not fully invested in equities (such as SF) would underperform the equity market. German T-bill rates were also rising (see **Exhibit 2**) but remained well below the returns being earned in the equity market. The story in 2008 and 2009 was the opposite; the dramatic fall in the value of the equity market meant any

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[3] All of SF's investors are from European Monetary Union (EMU) member countries, so all of SF's transactions are conducted in euros (€). Only German government bonds are included in the portfolio because they are considered by the market to be the least risky bonds. This is based on German government bonds having the lowest yield across the EMU countries.

[4] Trading costs included more than the brokerage commissions and exchange fees charged on each trade. The costs also included market impact and the portion of the bid-ask spread incurred each time a trade was executed. Two prices are posted on the exchange: a price at which an investor can purchase the security (the ask price) and a price at which the investor can sell the security (the bid price). The difference between these two prices (the bid-ask spread) is the profit the market maker earns and compensates him or her for carrying an inventory of the security and being ready to trade. Market impact is how much an investor moves the price up (when buying) or down (when selling). In general, the higher a security's trading volume and the more liquid the security, the lower the market impact. Traders willing to provide liquidity sometimes can capture part of the spread or effectively have negative market impact.

[5] The STOXX Europe Total Market Index (symbol: BKXP) is a value-weighted index representing 95% of the free-float market capitalization of Western Europe's equity markets. By the end of 2012, the index contained more than 1,000 stocks from eighteen countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. Although not all of these countries use the euro as their currency, the index is quoted in euros, and the price of stocks quoted in other currencies is converted to euros before inclusion in the index.

fund not fully invested in the market would outperform the equity market. The equity market's value fell by half from the beginning of 2007 to the beginning of 2009. The return on T-bills declined sharply, from 3.6% at the beginning of 2007 to 1.1% at the beginning of 2009. Although these rates were low, they were still better than the losses in the equity market.[6]

The wild fluctuations in the equity market meant that successfully shifting between the equity market and T-bills could lead to a meaningful improvement in performance, if the timing were right. Schumpeter was able to outperform the 60/40 benchmark by overweighting equities (relative to the benchmark) in the rising market of 2006. Schumpeter started decreasing SF's equity allocation in early 2007 and had scaled it down to the lower end of the fund's guidelines (40%)—but not quickly enough to avoid significant losses. The portfolio lost 27% in 2008, but this was a much smaller loss than those incurred by the fund's benchmark (-33%) and the equity market (-46%). Oddly, 2008 turned out to be the fund's best year on a relative-performance basis but its worst year on an absolute-performance basis. In 2012 and 2013, the fund again overweighted equities relative to the benchmark and was thus able to outperform the benchmark in these years. The fund now has a 65% allocation to equity (up from 59% at the end of 2013). The fund has outperformed its benchmark by 98 basis points (0.98%) since 2006 (see **Exhibit 3**).

Expanding the Investment Thesis

SF's portfolio did well over the prior eight years through both rising (bull) markets and falling (bear) markets. Although the firm purchases only the equity index, Schumpeter has tracked a small number of individual stocks included in the market index. She had noticed that sometimes the stocks in the index tended to rise and fall together, whereas at other times they tended to move more independently. The average correlation of stocks in the Russell 1000 has risen and fallen over the past eight years (see **Exhibit 4**). It peaked at 60% in early 2009 (during the worst point in the Great Recession) and has since spiked twice more. The correlations had been low in the last year, which meant that stocks were no longer moving together as often as before.[7] In periods of wider dispersion, the opportunity for stock picking was greatest.

> *Dispersion lets us measure the spread between the best and worst stocks. In high-dispersion periods, the best and worst stocks have returns that are far apart. In low-dispersion periods, the returns are relatively close. As far as the opportunities for active management, there are intrinsically bigger with high dispersion.*[8]

When individual stocks don't move together (the spread between the best- and worst-performing stocks increases), the spread between the best- and worst-performing managers also grows.[9]

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[6] T-bill rates continued to fall and, in 2012, reached rates of less than 10 basis points (0.10%). The decline in rates generated capital gains for investors who were holding long-term government bonds. Because SF held only short-term government bonds and held them to maturity, the fund's investors did not realize any capital gains on their fixed-income investment, although they did see the return on their fixed-income portfolio collapse.

[7] The method for calculating the average correlation is described in Exhibit 4. The correlation of stocks in the FTSE 100 Index showed a similar pattern. In 2006 the average correlation was approximately 25%, but by late 2008 this number had risen to over 50%. In 2010, it rose to more than 65% before falling in 2011. Anthony A. Renshaw and Anureet Saxena, "What's Up With Equity Correlations? They're Down and Factor Volatility Is To Blame," Axioma Research Paper No. 026, January 2011.

[8] Craig Lazzara, head of index investment strategy at S&P Dow Jones Indices, quoted in Jeremy Schwartz, "Is It Finally Becoming a Stock Pickers' Market? Is It Ever?" *The Wisdom Tree Blog*, February 13, 2014.

[9] Ibid.

Since the end of 2013, individual stocks had been showing signs of becoming disconnected from one another after moving in lockstep since the financial crisis. This gave hope that stocks would start to trade based on firm-specific factors such as sales growth, profit margins, and the possibility of takeovers. In addition, correlations in the equity indices of the various countries in Europe had also declined. As one analyst noted, "Correlations across countries have dropped over the last three years suggesting that investors can benefit from country valuation differences."[10]

Lately, some of SF's investors have been encouraging Schumpeter to invest some of the equity portfolio in selected stocks, and she has started to consider the possibilities. The current market seems to Schumpeter better suited to stock pickers. She is particularly interested in two stocks: ThyssenKrupp AG and Deoleo SA.

ThyssenKrupp AG

AG&SA

ThyssenKrupp AG (TKA) is a materials and technology holding company based in Essen, Germany, that has investments in more than 850 companies worldwide.[11] It was formed by the 1999 merger of Thyssen AG and Friedrich Krupp AG. Through its European and Americas steel division, it produces, processes, and markets steel products in Europe and in both North and South America. Through its material services division, it distributes to global customers the materials and technical services used in manufacturing. Through its elevator and technology division, it is active in the construction, modernization, and servicing of elevators, escalators, moving walks, and stair and platform lifts, as well as passenger boarding bridges. Through its industrial solutions division, it supplies plant construction as well as naval shipbuilding. Through its components technology division, it distributes components for the automotive, construction, and engineering sectors, as well as for wind turbines. ThyssenKrupp generates 60% of its sales within the European Union, about half of it from Germany.

ThyssenKrupp was performing well prior to the recession. The company's stock price was up 70% in 2006, and its prospects were good (see **Exhibit 5**).

> *TK has again been a robust performer this year—the business . . . is performing well and numbers have been very strong. It has been driven by booming demand especially in Europe, with a business mix that is well suited to the current type of cycle . . . For all of its defensive qualities, it is interesting to note in our view that around 80% of the EBITDA (earnings before interest taxes and depreciation) and 87% of the PBT (profit before tax) in the last quarter came from arguably the most cyclical elements of the group: Steel, stainless and services.*[12]

In 2006, ThyssenKrupp announced a five-year investment plan of €17–20 billion that would fund a mix of organic growth and acquisitions.[13] Credit Suisse equity analysts noted at the time that these investments would not affect short-term profits, as "the projects are generally longer

[10] Ann Marie, "European Equity Correlation Diverges," *ValueWalk*, October 30, 2013.

[11] Elizabeth Collins and Andrew Lane, "ThyssenKrupp Is Making Gradual Progress in Optimizing Its Asset Portfolio," Morningstar Equity Research, February 14, 2014.

[12] Michael Shillaker, Ephrem Ravi, Farhinaz Amarsy, and Hannah Kirby, ThyssenKrupp AG, Credit Suisse, February 27, 2007.

[13] Markus Leitner, Peter Archbold, and Monica Klingberg, "Fitch Affirms ThyssenKrupp at BBB+," Fitch Ratings, December 1, 2006.

term (especially steel) so the returns are back loaded to the end of the decade . . . and a lot can happen between now and 2010."[14]

By the end of 2008, ThyssenKrupp's business already had begun to struggle.[15] Global gross domestic product was projected to rise by only 1.2% in 2009, the lowest level since the downturn of the early 1980s.[16] Because of slack demand from customers, ThyssenKrupp was forecasting a cut in shipments of flat carbon steel by 15% and of stainless steel by 25% in the first half of 2009.[17] In the first quarter of 2009, the company reported that orders were down significantly, as equity analysts had predicted.[18] The stock price for ThyssenKrupp had already begun to fall, having peaked at €38.08/share in May 2008 (see Exhibit 5). The stock bottomed out in March 2009 (as did the European equity market) at €12.67 per share (a fall of 67%). The monthly returns, adjusted stock price, and monthly trading volume for ThyssenKrupp are reported in **Exhibit 6**. In early 2010, the stock price was up 45% since the previous January, and equity analysts at both Deutsche Bank and Macquarie rated the stock a buy.[19]

> *We consider TKA to be an inexpensive, early-cycle and rare industrial goods restructuring story. With the shares at €22 (only 6.9x September 2011 earnings . . .), we consider the uncertainties discussed above to be more than adequately discounted. We therefore retain our outperform recommendation.*[20]

The "uncertainties" to which the Macquarie report referred were ThyssenKrupp's exposure to the auto sector. Auto sales rose in 2009 in response to government programs that encouraged customers to scrap old cars. Auto production in Europe leaped in the fourth quarter of 2009.[21]

ThyssenKrupp's stock is currently up 22% over last year's price (from March 2013 to March 2014). First-quarter adjusted operating profit from continuing operations more than doubled from the same period last year. The increased profitability was mainly the result of improved

[14] Michael Shillaker, Ephrem Ravi, Farhinaz Amarsy, and Hannah Kirby, "ThyssenKrupp AG," Credit Suisse, February 27, 2007.

[15] In September 2008, ThyssenKrupp experienced its worst month since the announcement of its five-year plan, with its stock price falling 37.4%. The fall was attributable to a number of factors, including weaker demand for steel, lower scrap prices ("Credit Suisse Downgrades Steel Sector," *Dow Jones Business News*, August 31, 2006), demands for the largest wage increase in 16 years by the IG Metall union ("German Workers Push for Biggest Wage Rise in Years," *Irish Independent*, September 9, 2008), and weaker-than-expected demand for its services division, which ThyssenKrupp was trying to sell ("Interview: Kloeckner CEO: No Interest in Thyssen Services Assets," *Dow Jones International News*, September 10, 2008).

[16] Bastian Synagowitz and David S. Martin, "Reflecting a Recession—PT Cut to E19," Deutsche Bank, November 12, 2008.

[17] Alain William, "ThyssenKrupp," Société Générale, December 1, 2008.

[18] Peter Metzger, "Orders in Steel (-38% Quarter on Quarter) and Stainless (-39% Quarter on Quarter) Declined as Dramatically as We Had Expected," "ThyssenKrupp," Oppenheim Research, December 1, 2008.

[19] The stock was up 22% in April 2009 on positive news about its restructuring plan and new sales initiatives. ThyssenKrupp put its Hellenic Shipyards up for sale, cut working capital, and announced job cuts that were larger than previously announced. ("ThyssenKrupp to Sell Greek Yard," *Marine Log*, April 20, 2009, and "ThyssenKrupp Plans to Cut More Jobs Than Thought," *Die Welt*, April 20, 2009). The company announced that its Nirosta subsidiary would provide the core materials for a biogas plant in central Saxony-Anhalt ("ThyssenKrupp Supplies Material for Biogas Plant in Germany," *ADP Renewable Energy Track*, April 14, 2009), and it launched a new subsidiary in Russia to strengthen their operations in Central and Eastern Europe ("ThyssenKrupp Launches Industrial Services Subsidiary in Russia," *Dow Jones International News*, April 2, 2009).

[20] Andrew Carter, "ThyssenKrupp," Macquarie Equity Research, February 15, 2010. See also Bastian Synagowitz and Mathias Carlson, "ThyssenKrupp," Deutsche Bank, May 12, 2010.

[21] "Euro auto production is perhaps the single most important driver of TKA through Steel Europe, Services and Components Technology. The second is steel raw material prices. The latter (iron ore, coking coal, etc.) are on the rise and there are concerns that the 'balance of power' is returning to the miners." Andrew Carter, "ThyssenKrupp," Macquarie Equity Research, February 15, 2010.

performance in the Steel Americas business.[22] The equity analysts at Credit Suisse remained bullish long-term—but with caveats.

> *We have often written about the long-term story of TKAG and its break-up potential. We continue to like the growth potential in (capital) goods, especially (the elevator division). We also think that it has become increasingly clear that we were right, in that TKAG (management) has confirmed steel would ultimately be in a better position outside of the conglomerate structure.*
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> *. . . the biggest risk we see lies in the emerging markets where recent currency moves suggest some (material) risk of the potential for a demand shock, which we believe would send the OECD (and hence German) recovery into reverse at a very inopportune time.*[23]

Deoleo SA

Deoleo SA (OLE) is a Spain-based firm primarily engaged in the food processing sector.[24] Deoleo manufactures olive oil and related oil seeds (e.g., sunflower), table olives, condiments, confectionary products and special by-products of the olive oil production process. Its brands of olive oils include Bertolli, Carbonell, Carapelli, Figaro, Koipe, and Sasso. Carbonell is the leading brand of olive oil in Spain, and Bertolli is the number-one brand worldwide and the second leading brand in Italy. Although it sells its products in over 80 countries, 26% of Deoleo's olive oil sales are in Spain and another 33% are in Southern Europe (excluding Spain).[25]

Deoleo SA grew dramatically during the first part of the millennium. Largely as a result of acquisitions of olive-oil producers such as Koipe, Minerva, and Carapelli, revenue grew almost 500% between 2000 and 2008 (from €216 million to €1,260 million).[26] Deoleo announced its purchase of Unilever's olive oil and vinegar business (Bertolli) in July 2008 for €630 million. The purchase was financed with debt and preferred equity as well as cash from the sale of its cookie business (Cuétara) for €215 million.[27]

With the Bertolli acquisition, Deoleo's fixed obligations (debt and preferred equity) rose from €698 million to €1,798 million. By the end of 2008, Deoleo had violated some of the financial covenants in its syndicated loan agreement and thus was in need of additional capital.[28] In 2009, Deoleo raised an additional €145 million from the Spanish bank Caja Madrid.[29] Deoleo's stock price dropped precipitously during this time (see **Exhibit 7**), falling 74% from the end of July

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[22] ThyssenKrupp sold its steel-rolling plant in Alabama but retained the 73% equity stake in its Brazilian steel-making operation. Elizabeth Collins and Andrew Lane, "ThyssenKrupp AG," Morningstar Equity Research, February 14, 2014.

[23] Michael Shillaker, Ephrem Ravi, Farhinaz Amarsy, and Hannah Kirby, "ThyssenKrupp AG," Credit Suisse, February 27, 2007.

[24] Although it was called Sos Cuétara SA prior to 2011, we have chosen to refer to the company by its current name, Deoleo SA, throughout the case.

[25] Guilherme Sampio and João Safara, "Deoleo," Banco Português de Investimento SA (BPI) Equity Research, January 30, 2014. Sixty-six percent of Deoleo's olive oil is produced in Spain. Moody's Investors Service press release, May 22, 2014.

[26] "Company Results: Sos Cuétara" Fortis Bank Flash Note, September 3, 2002; and "Grupo SOS," Fortis Bank Investment Research, June 4, 2009.

[27] Guilherme Sampio and João Safara, "Deoleo," Banco Português de Investimento SA (BPI) Equity Research, January 30, 2014.

[28] In addition to required interest and principal payments, loan contracts often include covenants or additional legal requirements a borrower must fulfill. These can include the requirement that certain financial ratios be met. An example would be a stipulation that the ratio of interest to earnings not rise above a certain level.

[29] Guilherme Sampio and João Safara, "Deoleo," Banco Português de Investimento SA (BPI) Equity Research, January 30, 2014.

2008 to the end of July 2009.[30] This was due in part to its financial difficulties and in part to problems with management. The board of directors removed the Salazar brothers—the largest shareholders in Deoleo, its CEO (Jesús Salazar) and its vice president (Jaime Salazar)—from their management positions and sued them for fraud.[31]

Deoleo's underlying business did surprisingly well during the recession. Consumption of olive oil had been falling slightly in Europe and continued to do so throughout the recession although not at a faster pace. Global demand was growing slightly prior to the recession and continued to do so throughout the recession (see **Exhibit 8**). Deoleo's sales actually grew 9.2% in 2009. A major reason Deoleo's business suffered little during the recession is the nature of the product the company sells. Demand for basic food products does not change dramatically over the business cycle. In addition, the recession caused a trend toward cooking at home rather than eating out at restaurants as a cost reduction method.

> *We are expecting that . . . there could be more grilling at home and, therefore, not only our products (olive oil), but the marinade category's products as well, could benefit from . . . an increase in consumption.*[32]

The focus on healthy eating has also driven the growth in olive oil consumption and reduced the impact of the recession on the sector.

> *People aren't going to flock to [other cooking oils] to save a couple of pennies when they know extra virgin olive oil is so good for them.*[33]

In 2010, Deoleo undertook a restructuring of its business that dramatically reduced the company's leverage. In May 2010, Deoleo's lenders agreed to convert a €60 million loan into equity. Then in December, three transactions raised additional equity and reduced fixed commitments. Deoleo raised €200 million in a rights issue, €185 million of preferred equity was converted into common equity, and an additional €128 million in debt was converted to equity.[34] Deoleo also began to sell off assets that were not part of its strategic focus, such as its rice division to Ebro (for €195 million).[35] The restructuring led to a healthier balance sheet and a focus on a single product: olive oil.

Following the restructuring, Deoleo's prospects look much brighter. As with many food products, population growth is the predominant driver of sales growth. Thus, sales growth will come predominantly in the emerging economies. Nonetheless, penetration levels of olive oil

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[30] Deoleo's average monthly trading volume, stock price, and monthly stock return (the latter two adjusted for dividend payments and stock splits) are reported in Exhibit 6.

[31] Guilherme Sampio and João Safara, "Deoleo," Banco Português de Investimento SA (BPI) Equity Research, January 30, 2014, and *The Olive Oil Gazette*, May 3, 2009.

[32] Lew Brosowsky, director of market research, Goya Foods, quoted in Nina Amir, "No Flash in the Pan: Olive Oil and Marinade Companies Say Health-Conscious Consumers, Product Innovations and Aggressive Promotions Will Help the Segments Grow," *Grocery News*, April 1, 2009.

[33] David Neuman, president, Lucini Italia, quoted in Amir, "No Flash in the Pan."

[34] Guilherme Sampio and João Safara, "Deoleo," Banco Português de Investimento SA (BPI) Equity Research, January 30, 2014. A rights issue is one in which a firm issues call options on its own stock to current shareholders. When the rights (options) are exercised, additional cash is paid into the firm, and shareholders receive stock in return. Preferred equity has a higher priority than common equity and often has a specified maturity, liquidation value, and dividend rate. Thus, it is structured like debt, but unlike debt, it does not allow the owner to sue the firm and force it into bankruptcy.

[35] "SOS Corporation Agrees to Sell Its Rice Division to Ebro Foods," *Wall Street Journal*, November 27, 2010.

consumption are still low in many developed economies.[36] Deoleo cut its workforce this past year and took other steps to improve its profit margin (e.g., selling less bulk olive oil and more high-margin branded oil). This led to a 31% increase in operating profits even though sales dropped 14%.[37]

Despite the improved financial performance, the business still faced a series of risks. The main driver of raw material costs is weather, which can significantly affect harvests and the price of olive oil.[38] Raw material costs (e.g., olives) make up 76% of Deoleo's operating costs. Competitive conditions can affect profit margins as well, and the industry has seen large entry and exit in the last decade. The commoditized nature of the product (demand in Spain and Italy is very price elastic) means that supply shocks (either agricultural or competitive) have a big effect on profitability.[39] This is especially true for a firm that sells only one product. Also, the execution risk with the new business strategy, given its leverage, is still high. Finally, Deoleo's banks may want to sell the equity stakes they acquired in the 2010 reorganization.[40]

Measuring Portfolio Risk

SF's investors are comfortable with the fund's strategy and understand its risks. A case can be made for seeking extra return in undervalued stocks. If the firm is going to change its strategy, however, it must communicate clearly the risks of the new strategy to its investors. Historical returns are a useful metric by which investors judge the performance of SF and so would have to be where the analysis of risk begins. The challenge Schumpeter faces is how to measure the investors' risk if the fund augments the portfolio with investments in individual stocks, such as ThyssenKrupp AG and Deoleo SA, as opposed to increasing its allocation to the equity index. Individual stocks are riskier than the market––but how much riskier?

[36] Guilherme Sampio and João Safara, "Deoleo," Banco Português de Investimento SA (BPI) Equity Research, January 30, 2014.

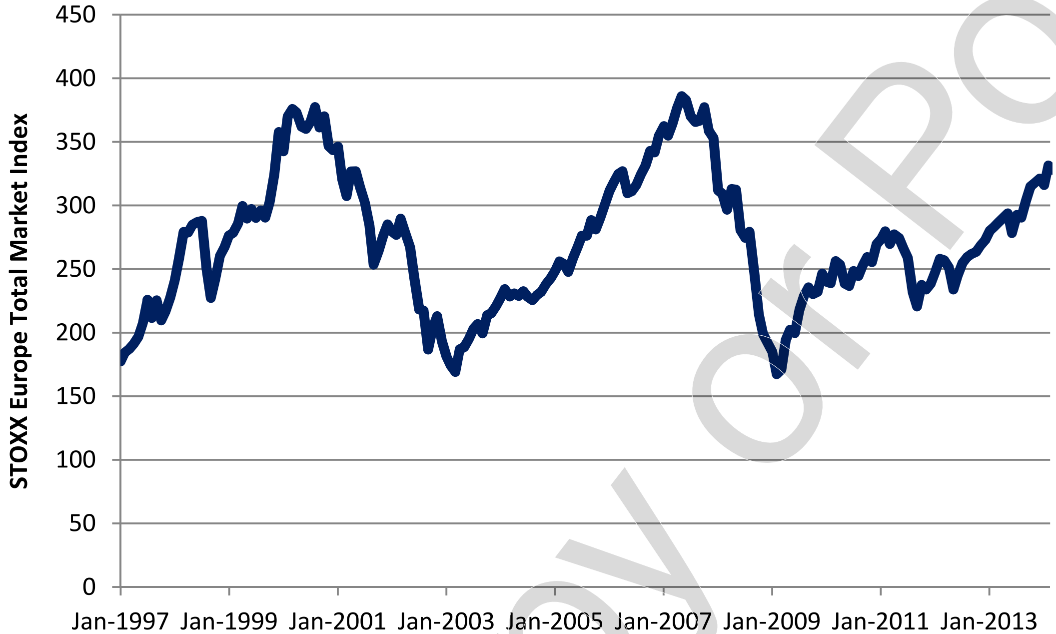
[37] Christopher Bjork, "Banks to Sell Stake in Spanish Olive Oil Giant Deoleo," *Wall Street Journal*, July 4, 2013.

[38] Guilherme Sampio and João Safara, "Deoleo," Banco Português de Investimento SA (BPI) Equity Research, January 30, 2014.

[39] Private label producers have been able to gain market share due to a lack of perceived product differentiation in the minds of some customers. Recent efforts by Deoleo to differentiate its product from low-quality alternatives have been showing progress. Guilherme Sampio and João Safara, "Deoleo," Banco Português de Investimento SA (BPI) Equity Research, January 30, 2014.

[40] "Spanish banks are shedding assets to cover losses caused by a prolonged economic downturn and a sharp rise in bad debts." Deoleo's lenders Bankia SA and Caixabank SA may sell equity stake which they obtained in 2010 as part of a debt restructuring. Their debt in Deoleo was exchanged for equity at the time. Bjork, "Banks to Sell Stake in Spanish Olive Oil Giant Deoleo."

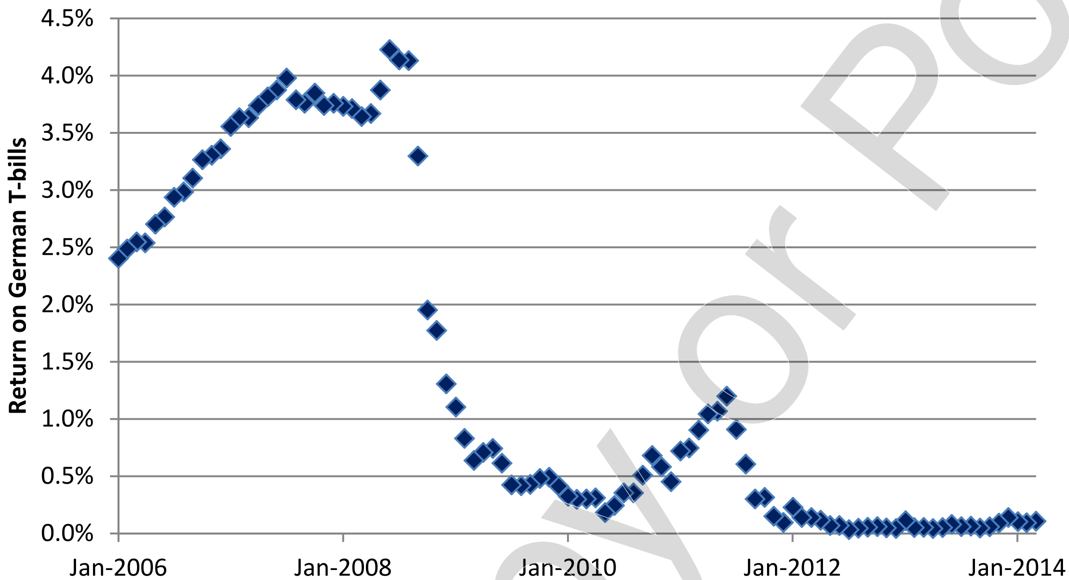
Exhibit 1: STOXX Europe Total Market Index



Notes: The exhibit graphs the level of the STOXX Europe Total Market Index (TMI). The STOXX Europe Total Market Index (symbol: BKXP) is a value-weighted index representing 95% of the free-float market capitalization of Western Europe's equity markets.

Source: Bloomberg.

Exhibit 2: Annualized Return on German Treasury Bills



Notes: The exhibit contains the yield on German T-bills expressed as an annual rate. The yields are based on the Bank of America Merrill Lynch German Treasury Bill index. The index includes bills with maturities of at least one month but less than one year.

Source: Bloomberg.

Exhibit 3: Historical Return Performance of Schumpeter Finanzberatung (%)

Year	Benchmark Return	Equity Share	Schumpeter Return	Return Differential
2014	1.36	62.4	1.39	0.03
2013	10.12	71.3	11.76	1.63
2012	8.52	70.7	10.21	1.69
2011	-6.35	66.1	-7.25	-0.90
2010	6.05	60.5	6.78	0.72
2009	16.79	47.9	14.20	-2.59
2008	-33.29	49.2	-26.79	6.50
2007	1.43	68.9	0.80	-0.63
2006	11.43	70.4	13.08	1.65
Fund Life	1.95	63.1	2.93	0.98

Notes: The table contains the historical returns for SF's fund, as well as the hypothetical return on its benchmark. The second column reports the returns on a portfolio that is 60% invested in the STOXX Europe TMI and 40% invested in German T-bills (the benchmark portfolio). The benchmark returns are reported before transactions costs. The average percentage of the fund invested in the STOXX index is reported in the third column. The actual returns on SF's portfolio after trading costs are paid are reported in the fourth column. Trading costs have averaged seven basis points (0.07%) per year but are higher in months when the portfolio allocation changes by greater amounts. The fifth column contains the average return differential of the Schumpeter fund over its benchmark. The numbers represent yearly averages. For the underlying monthly data, please refer to the spreadsheet accompanying this case.

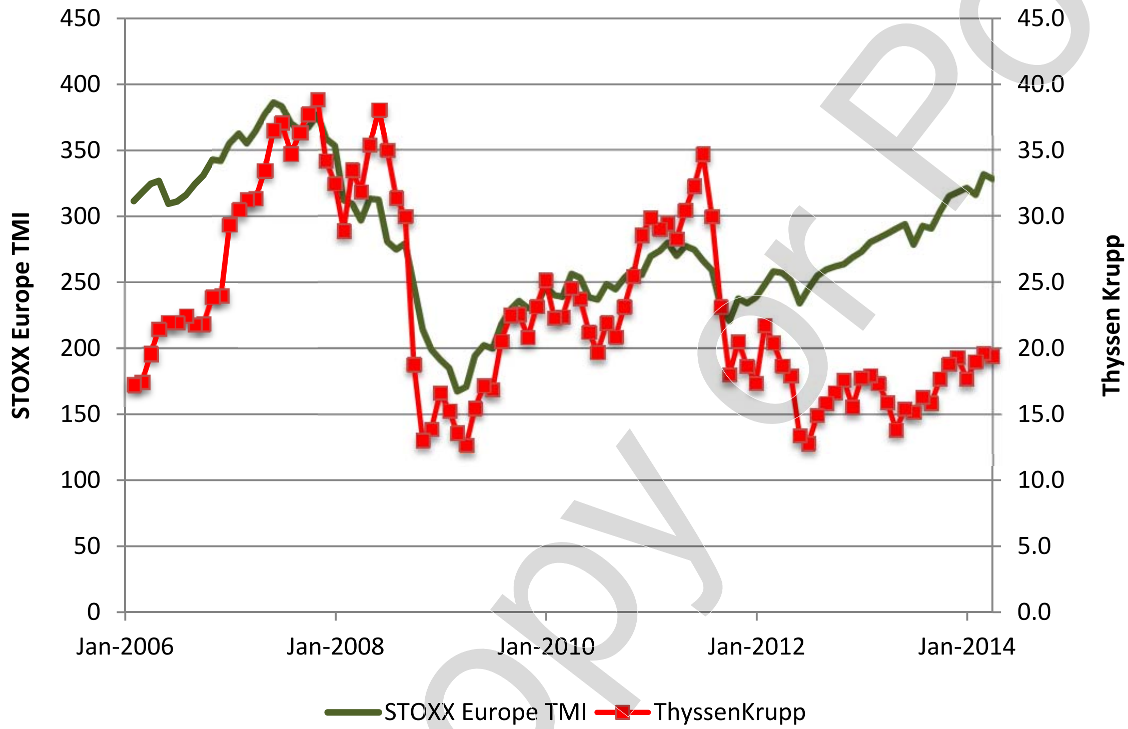
Source: Schumpeter Finanzberatung GmbH.

Exhibit 4: Average 60-Day Correlation of Stocks in the Russell 1000 Index

Notes: The exhibit contains the average correlation of stocks in the Russell 1000. To calculate the average correlation among stocks in the Russell 1000, the correlation between each pair of stocks in the index is calculated. The Russell index contains 1,000 stocks, which means there are 499,500 (1,000 * 999/2) stock-stock correlation pairs. The correlations are calculated over 60 days, and then the average is computed.

Source: Data provided by Russell Investments and Axioma, Inc.

Exhibit 5: ThyssenKrupp AG Stock Price and STOXX Europe TMI



Notes: The exhibit graphs the level of the STOXX Europe TMI (left axis) and the stock price of ThyssenKrupp AG (right axis) from January 2006 through March 2014.

Source: Bloomberg.

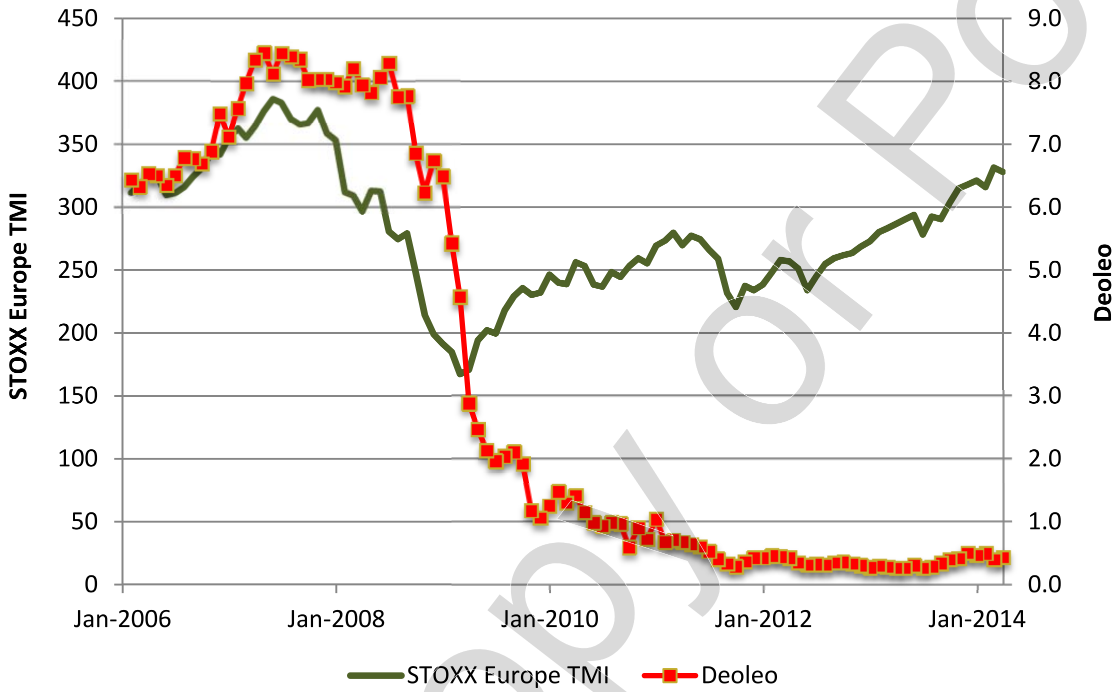
Exhibit 6: Comparative Data on Stock Prices, Returns, and Volumes

	T-Bills	STOXX Europe TMI		ThyssenKrupp AG			Deoleo SA		
Date	Return	Price (€)	Return	Price (€)	Return	Volume (in thousands of shares)	Price (€)	Return	Volume (in thousands of shares)
3/31/2014	0.01%	327.97	-1.05%	19.42	-1.10%	57,177	0.44	10.13%	123,984
2/28/2014	0.01%	331.44	4.89%	19.63	3.32%	62,387	0.40	-20.20%	125,949
1/31/2014	0.01%	315.98	-1.60%	19.00	7.41%	61,774	0.50	5.32%	82,683
12/31/2013	0.01%	321.12	1.03%	17.69	-8.44%	85,017	0.47	-6.00%	38,702
11/30/2013	0.01%	317.86	0.94%	19.32	2.71%	44,346	0.50	19.05%	61,611
10/31/2013	0.00%	314.91	3.83%	18.81	6.24%	52,928	0.42	5.00%	72,870
9/30/2013	0.00%	303.29	4.41%	17.71	11.67%	70,227	0.40	17.65%	62,822
8/31/2013	0.01%	290.48	-0.68%	15.86	-2.79%	69,642	0.34	19.30%	70,778
7/31/2013	0.00%	292.46	5.11%	16.31	7.51%	80,902	0.29	7.55%	20,684
6/30/2013	0.01%	278.25	-5.27%	15.17	-1.62%	73,850	0.27	-13.11%	26,470
5/31/2013	0.00%	293.74	1.20%	15.42	11.46%	90,413	0.31	15.09%	30,208
4/30/2013	0.00%	290.25	1.26%	13.84	-12.99%	89,216	0.27	1.92%	40,560
3/31/2013	0.00%	286.64	1.25%	15.90	-8.25%	70,325	0.26	-7.14%	21,316
2/28/2013	0.00%	283.10	1.03%	17.33	-3.45%	54,037	0.28	-5.08%	23,860
1/31/2013	0.01%	280.21	2.72%	17.95	1.07%	64,016	0.30	7.27%	38,535

Notes: The exhibit contains monthly return data on German T-bills, the STOXX Europe Total Market Index, ThyssenKrupp AG, and Deoleo SA. The exhibit also contains the level of the STOXX index, as well as the stock price and monthly trading volumes for ThyssenKrupp and Deoleo. The stock price and returns are adjusted for the effects of stock splits and dividends. For example, if the stock price was €100 at the end of the prior month, the stock paid a dividend of 4 at the end of the month, and the ex-dividend stock price was €97, the investor's return would be 1% [(97 + 4) / 100 – 1]. It is assumed that intra-month dividends are reinvested in the stock. A similar calculation is done for stock splits. If the stock price was €100 and the stock split two for one, then the post-split stock price is multiplied by 2. Thus, if the post-split stock price is €51, the return an investor would earn would be 2% (2*51 / 100 – 1).The data for 2013 and 2014 are reported in this exhibit; the data back to January 2006 is available in the spreadsheet that accompanies this case.

Source: Bloomberg.

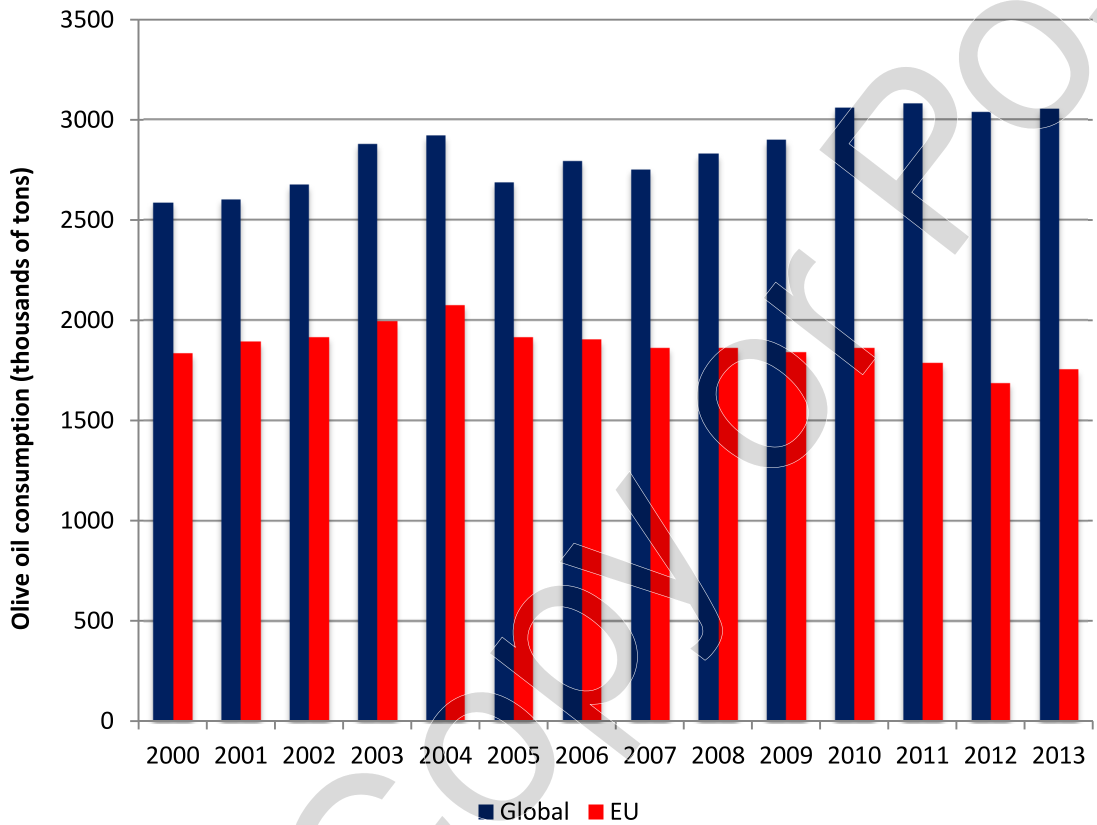
Exhibit 7: Deoleo SA (OLE) Stock Price and STOXX Europe TMI



Notes: The exhibit graphs the level of the STOXX Europe TMI (left axis) and the stock price of Deoleo SA (right axis) from January 2006 through March 2014.

Source: Bloomberg.

Exhibit 8: Global Olive Oil Consumption



Notes: The exhibit shows global and European Union (EU) olive oil consumption from 2000 through 2013 in thousands of tons.

Source: International Olive Council.